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On *Micrambe* THOMSON, 1863 of China (Coleoptera: Cryptophagidae)

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Abstract: One species of *Micrambe* THOMSON, 1863, *M. sinensis* GROUVELLE, 1910, is revalidated, three species (*M. schuelkei* nov.sp., *M. yunnanensis* nov.sp. and *M. zhejiangensis* nov.sp.) are described and illustrated. A key and a provisional catalogue for *Micrambe* of China are given. The distribution of *M. bimaculata* (PANZER, 1798) is discussed.

Key words: Cryptophagidae, *Micrambe*, Palaearctic Region, China, new species, revalidation.

Introduction

Among *Micrambe* specimens from China, were found a few specimens that differs from *Micrambe bimaculata* (PANZER, 1798) from Europe in a few characteristics. Besides *M. bimaculata* there were some names and synonyms to proof for its applicability for the specimens from China. Studying the types of *Micrambe duclouxi* GROUVELLE, 1910, *Pteryngium duclouxi* GROUVELLE, 1916 and *Micrambe sinensis* GROUVELLE, 1910 proved that all three names be among to a separate species which is not identical with *M. bimaculata*. From the synonyms, *M. sinensis* was chosen due to homonymy of *M. duclouxi*. Three further species were described here first time.

Material and methods

The material examined is deposited in the following collections:

MHNP..... Musée historie naturelle, Paris
 MNHM..... Hungarian National History Museum, Budapest
 NME..... Naturkundemuseum Erfurt, Erfurt
 SMNS..... Staatliches Museum für Naturkunde, Stuttgart
 ZMB..... Museum für Naturkunde, Berlin
 cES..... author's private collection
 cPÜ..... private collection Andreas Pütz, Eisenhüttenstadt

The morphological studies were conducted using a Euromex DZ 1605 and Eschenbach Kolleg SH 45. Photographs were created with a TouPCam 14MP (TouPCam).

Body length was measured from the head to the apex of the elytra, length of pronotum in the middle, broadness on the broadest part.

Revalidation of *Micrambe sinensis* GROUVELLE, 1910

GROUVELLE (1910) described two *Micrambe* (*M. duclouxi* and *M. sinensis*) and later (GROUVELLE 1916) *Pteryngium duclouxi* from China. They all were later synonymized with *Micrambe bimaculata* (PANZER, 1798) (JOHNSON et al. 2007). Studying the types of all three synonyms, proved that *Micrambe duclouxi* GROUVELLE, 1910, *Micrambe duclouxi* (GROUVELLE, 1916) and *Micrambe sinensis* GROUVELLE, 1910 are synonyms of the same species but not of *Micrambe bimaculata*. Therefore, the following revisions have been made:

Micrambe sinensis GROUVELLE, 1910 stat.rev.

Micrambe duclouxi GROUVELLE, 1910 syn.nov.

Micrambe duclouxi (GROUVELLE, 1916) syn.nov.

Description of new species

Micrambe schuelkei nov.sp.

Type material: Holotype ♂: "China, mountain W Gejiu, 23°24'13''N, 103°07'28''E, 1990 m, misted forest, litter and various debris sifted, 25.VIII.2014, leg. M. Schülke [CH14-20b]" [ZMB].

Paratypes: 1 ♂, 1 ♀ "China, mountain W Gejiu, 23°24'13''N, 103°07'28''E, 1990 m, misted forest, litter and various debris sifted, 24.VIII.2014, leg. M. Schülke [CH14-20b]" [ZMB]; 1 ♀ "China, mountain W Gejiu, 23°24'13''N, 103°07'28''E, 1990 m, misted forest, litter and various debris sifted, 23.VIII.2014, leg. M. Schülke [CH14-20b]" [ZMB]; 4 ♂♂, 3 ♀♀ "China, Yunnan, E Kunming, Xiaobailong Forest Park, 24°55'43''N, 103°05'22''E, 2110 m, secondary pine forest, pine litter and litter at trail margin sifted, 10.VIII.2014, Schülke [CH14-03]" [ZMB, cES]; 3 ♂♂, 2 ♀♀ "China, Yunnan, NE Kunming, 25°09'07''N, 102°53'46''E, 2280 m, secondary pine forest, with scattered old alder, litter sifted, 11.VIII.2014, Schülke [CH14-04]" [ZMB, cES]; 2 ♂♂ "China, Yunnan, mt. W Xundian, 25°34'58''N, 103°08'42''E, 2300 m, mixed forest with alder, pine, shrub undergrowth, litter, twigs and roots of herbs sifted, 15.VIII.2014, Schülke [CH14-09]" [ZMB, cES]; 1 ♀ "China, Yunnan [CH07-08], Dali Bai Auton. Pref., Diancang Shan 43 km NW Dali, 3078 m, 25°59'35''N, 99°52'06''E, W pass, Rhodod., oaks, bamboo, sifted, 29.V.2007, M. Schülke" [ZMB].

E t y m o l o g y : The specific epithet points on Michael Schülke (Berlin), who found the type material and a huge amount of species from various regions.

D e s c r i p t i o n : Male, wings fully developed, 1,9 mm. Reddish-brown, elytra with an undulated, well-defined black spot in the medium part and a little black spot on the apex of each elytron (fig. 9). Eyes conical. Pronotum 1,45 times broader than long, broadest between the anterior angles, strongly punctate, margin with strong teeth, surface very convex, sloping towards the margin, anterior callosities strongly prominent, margin nearly straight. Elytra stout, hairs uniform semi-erected, shoulders well developed, strongly punctate on the anterior part, less to the posterior part. Legs slender, tarsi with five segments, posterior tarsi with four segments (only in male), anterior tarsi segments 1-4 moderately widened (only in male). Antennae slender, club well developed, segments 3-5 longer than broad but unequal, segments 6-7 slightly longer as broad, segment 8 nearly moniliform, segment 9 and 10 conic and nearly broad as long, segment 11 oval, longer than broad, conical. Parameres as in fig. 10.

C o m m e n t : Most of the specimens were distinguished by the typical coloration with the undulated spot on each elytron (see above). Two paratypes are uniformly reddish-

brown without any black coloration on the elytra. They are very similar to the following species and only distinguishable in studying the parameres.

D i s t r i b u t i o n : So far known in China, province Yunnan.

***Micrambe yunnanensis* nov.sp.**

T y p e m a t e r i a l : Holotype ♂: "China (Yunnan), Baoshan Pref., Gaoligong Shan, 33km SE Tengchong, 24°51'22"N/ 98°45'36"E, 2100-2200 m (prim. decid. forest, brook bank, litter, moos sifted), 31.V.2007 D. W. Wrase (14B)" [NME].

Paratypes: 1♂, with the same data as holotype [NME]; 1♀ "China: Yunnan [CH 07-15], Baoshan Pref., Gaoligong Shan, 29 km ESE Tenchong, 24°55'37"N, 98°45'09"E, 2350 m, dev. Decid. Forest, litter, wood, fungi sifted, 1.VI.2007 M. Schülke" [SMNS]; 1♀ "China, N-Yunnan, Dali Bai Nat. Aut. Pref., Diancang Shan, 3 km W Dali Old Town / pine for. at Cloud Road, 2650-2750 m, 30.8.2003, leg. Schülke" [cES]; 1♂, 1♀ "China, N-Yunnan [C03-19A], Dali Bai Nt. Aut. Pref., Diancang Shan, 3 km w Dali Old Town, pine forest at Cloud Road, right upper chairlift station, 25°41.1'N, 100°06.8'E, 2650-2750m / [C03-19A] pine needles, moss (dry) in ditches, mushrooms, 30.VIII.2003, leg. M. Schülke" [cES]; 1♂ "China, N-Yunnan [C03-19B], Dali Bai Nt. Aut. Pref., Diancang Shan, 3 km w Dali Old Town, pine forest at Cloud Road, right upper chairlift station, 25°41.1'N, 100°06.8'E, 2650-2750m / C03-19B] pine needles, moss (dry) in ditches, mushrooms, traps, 1.IX.2003, leg. M. Schülke" [cES].

E t y m o l o g y : The specific epithet points on the province Yunnan in China, where the type material were found.

D e s c r i p t i o n : Male, wings fully developed, 1,9 mm. Reddish-brown, elytra with a rounded, not well-defined black spot in the medium part and a little black spot on the apex of each elytron (fig. 3). Eyes conical. Pronotum 1,45 times broader than long, broadest between the anterior angles, strongly punctate, margin with strong teeth, surface very convex, sloping towards the margin, anterior callosities not prominent, margin nearly straight. Elytra stout, hairs uniform semi-erected, shoulders well developed, strongly punctate on the anterior part, less to the posterior part. Legs slender, tarsi with five segments, posterior tarsi with four segments (only in male), anterior tarsi segments 1-4 moderately widened (only in male). Antennae slender, club well developed, segments 3-7 longer than broad but unequal, segment 8 nearly moniliform, segment 9 and 10 conic and nearly broad as long, segment 11 oval, longer than broad, conical. Parameres as in fig. 6.

C o m m e n t : Distinguished from *M. bimaculata* and *M. sinensis* by its strong punctuation (pronotum, elytra), Parameres triangular (fig. 7). Very similar to *M. zhejiangensis*, distinguished by the non-prominent callosity and the parameres. Also similar to *M. micramboides* (REITTER, 1874), which is strongly stout, with a pronotum broader and with rounded margins (fig. 11). Distinguished from *M. schuelkei* nov.sp. by its rounded, not well-defined spot.

D i s t r i b u t i o n : So far known in China, province Yunnan.

***Micrambe zhejiangensis* nov.sp.**

T y p e m a t e r i a l : Holotype ♂: "China: Zhejiang (CH07-36), West Tianmu shan N. R., way to peak of immortals, 30°20'34"N/ 119°25'51"E, 110-1200 m, prim. mixed forest, litter, moos sifted, 15.VI.2007. M. Schülke" [ZMB].

Paratypes: 4♂, 7♀ with the same data as the holotype [ZMB, cES].

E t y m o l o g y : The specific epithet points on the province Zhejiang in China, where the type material were found.

Description: Male, wings fully developed, 1,9 mm. Reddish-brown, elytra with a rounded, not well-defined black spot in the medium part and a little black spot on the apex of each elytron (fig. 4). Eyes conical. Pronotum 1,5 times broader than long, broadest between the anterior angles, strongly punctate, margin with strong teeth, surface very convex, sloping towards the margin, anterior callosities strongly prominent, margin nearly straight. Elytra stout, hairs uniform semi-erected, shoulders well developed, strongly punctate on the anterior part, less to the posterior part. Legs slender, tarsi with five segments, posterior tarsi with four segments (only in male), anterior tarsi segments 1-4 moderately widened (only in male). Antennae slender, club well developed, segments 3-7 longer than broad and equal, segment 8 shorter but not moniliform, segment 9 and 10 strong conical, segment 11 long as broad, rounded and conical. Parameres as in fig. 8.

Comment: Distinguished from *M. bimaculata* and *M. sinensis* by its strong punctuation (pronotum, elytra), Parameres strongly triangular (fig. 8). Very similar to *M. yunnanensis*, distinguished by the prominent callosity and the parameres. Also similar to *M. micramboides* (REITTER, 1874), which is strongly stout, with a pronotum broader and with rounded margins (fig. 11). Distinguished from *M. schuelkei* nov.sp. by its rounded, not well-defined spot.

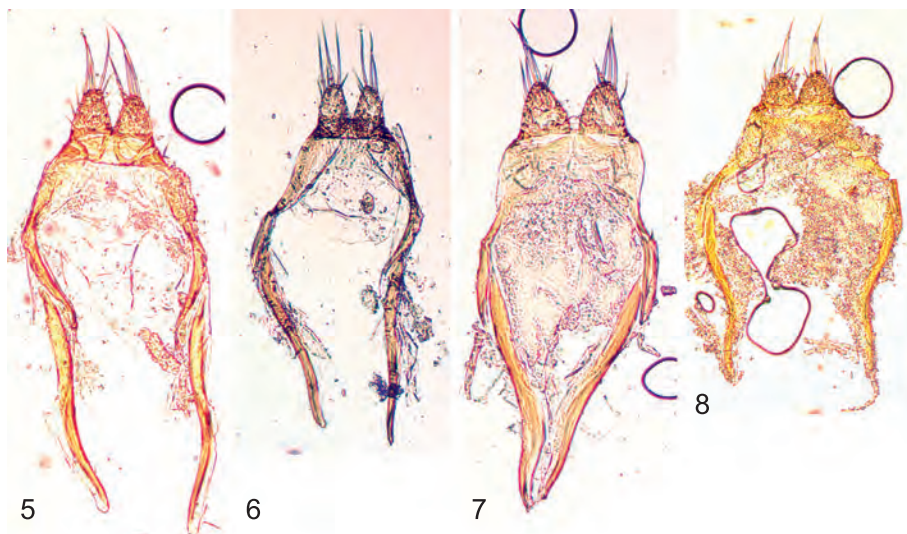
Distribution: So far known in China, province Zhejiang.



Figs 1-2: (1) *Micrambe bimaculata* (PANZER, 1798), Ukraine, male; (2) *Micrambe sinensis* GROUVELLE, 1910 stat. rev. from China (Shanxi), male.



Figs 3-4: (3) *Micrambe yunnanensis* nov.sp. from China (Yunnan), male; (4) *Micrambe zhejiangensis* nov.sp. from China (Zhejiang), male.



Figs 5-8: Parameres of (5) *Micrambe bimaculata* (PANZER, 1798); (6) *M. sinensis* GROUVELLE, 1910; (7) *M. yunnanensis* nov.sp.; (8) *M. zhejiangensis* nov.sp.

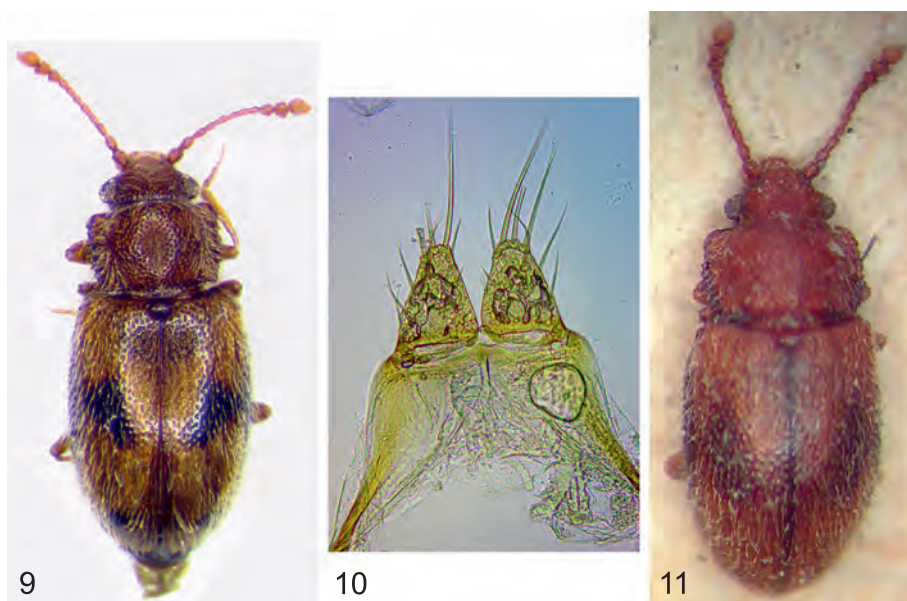


Fig. 9-10: (9) *M. schuelkei* nov.sp., paratype; (10) *M. schuelkei* nov.sp., parameres; **Fig. 11:** *Micrambe micramboides* (REITTER, 1874) from Japan, paratype.

Material examined

Micrambe bimaculata (PANZER, 1798)

Type material: five syntypes from Germany [ZMB]; four specimens from China (Qinghai) [NME, ZMB]; further a lot of specimens from the West Palaearctic and Siberia.

Micrambe micramboides (REITTER, 1874)

Type material: holotype and two paratypes from Japan [MNHM].

Micrambe schuelkei nov.sp.

Type material from China (Yunnan), see above.

Micrambe sinensis GROUVELLE, 1910

Type material: two specimens from China (Tianjin) [MHNP], further type-material of *M. duclouxi* GROUVELLE, 1910 (one specimen from China, Yunnan) [MHNP] and *Pteryngium duclouxi* GROUVELLE, 1916 (one specimen from China, Yunnan) [MHNP]; seventy-one specimens from China (Shaanxi) [NME, cPÜ, cES]; one specimen from China (Hubei) [NHMW]; three specimen from China (Beijing) [cPÜ, cES]; one specimen from China (Henan) [cES].

Micrambe yunnanensis nov.sp.

Type material from China (Yunnan), see above.

***Micrambe zhejiangensis* nov.sp.**

Type material from China (Zhenjiang), see above.

Provisional catalogue of *Micrambe* THOMSON, 1863 of China

Micrambe bimaculata (PANZER, 1798): China: Beijing, Guizhou, Hebei, Hubei, Shaanxi, Sichuan, Yunnan, Zhejiang (JOHNSON et al. 2007), Qinghai (present paper).

The recent distribution in China needs revision. At the moment only known from Qinghai. Further distributed in Russia (east to Siberia), Europe (JOHNSON et al. 2007), India (OTERO 2004).

Micrambe schuelkei nov.sp.: China: Yunnan.

Micrambe sinensis GROUVELLE 1910: Tianjin (locus typicus), Beijing, Henan, Hubei, Shaanxi, Yunnan.

Micrambe duclouxi GROUVELLE, 1910

Micrambe duclouxi (GROUVELLE, 1916)

Micrambe yunnanensis nov.sp.: China: Yunnan.

Micrambe zhejiangensis nov.sp.: China: Zhejiang.

Key to the *Micrambe* species resembling with *M. bimaculata* (PANZER, 1798)

- 1 Segments 4, 6, 7 and 8 of antennae more moniliform. Segments 1 to 3 of protarsi in male widened, segment 3 nearly two times wider than the following segments 4 and 5. The first three segments of the mesotarsi widened, only a little more than the following segments 4 and 5. Wings reduced (fig. 1, 5) *bimaculata* (PANZER, 1798)
- Segments 3 to 8 slender, only segment 4 sometimes only a little more long than broad. Segments 1 to 3 of protarsi in male widened, segment 3 is a little broader than the following segments 4 and 5. Mesotarsi: segments 1 to 3 not widened. Wings well developed 2
- 2 Male: parameres more slender, base of each paramere nearly just half small as long (without membranous basal part); parameres similar to those of *M. bimaculata*, but in *M. bimaculata* the membranous basal part of the parameres is nearly so long as the parameres. Parameres bearing membrane delicate. Pubescence with more procumbent hairs (figs 2, 6) *sinensis* GROUVELLE, 1910
- Male: parameres more or less stout, triangular. Parameres bearing membrane sturdy. Pubescence of elytra with more erected hairs 3
- 3 With an undulated black spot on each elytron and a little round spot on the apex, its margins well-defined (figs 9, 10) *schuelkei* nov.sp.*
- Spot on each elytron more rounded, not well-defined, sometimes lacking any spots 4
- 4 Male: parameres very stout, membranous basal part very short, one third of the paramere long. Anterior callosity of pronotum prominent *zhejiangensis* nov.sp.*
- Male: parameres stout, membranous basal part nearly long as the parameres. Anterior callosity not prominent (like in *M. bimaculata* and *M. sinensis*) *yunnanensis* nov.sp.*

*A similar species is *M. micramboides* (REITTER, 1874) from Japan (fig. 11), which is stout and with a broader pronotum. Shape of parameres between *M. bimaculata* and *M. yuannensis*.

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Zusammenfassung

Eine Art der Gattung *Micrambe* THOMSON, 1863 aus China wird revalidiert (*M. sinensis* GROUVELLE, 1910), drei weitere beschrieben: *M. schuelkei* nov.sp., *M. yunnanensis* nov.sp. und *M. zhejiangensis* nov.sp. Es werden ein Schlüssel und ein vorläufiger Katalog zu den aus China bekannten *Micrambe*-Arten vorgestellt. Die Verbreitung von *M. bimaculata* (PANZER, 1798) in China wird diskutiert.

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